DOCUMENT RESUME

ED 255 798 CG 018 130

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TITLE Business Profitability: A Simulation Study of Personalities and Organizational Success.
PUB DATE Aug 84
NOTE 21p.; Paper presented at the Annual Convention of the American Psychological Association (92nd, Toronto, Ontario, Canada, August 24-28, 1984).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Achievement Need; Business Education; College Seniors; Computer Simulation; *Entrepreneurship; Higher Education; Individual Needs; Individual Power; Management Games; *Personality Traits; Reinforcement; Sex Differences; *Success

ABSTRACT

There is no clearly established link between business success and the personality characteristics of the individual. To investigate the effect of the personalities of potential entrepreneurs/business owners on success, college senior business administration majors (N=152) participted in a business simulation game. Subjects first completed the Work and Family Orientation Inventory to measure achievement motivation, the Extended Personality Attributes Questionnaire to assess stable owner characteristics, and power/influence questionnaires. Subjects then participated in teams of four in the business simulation game for 8 consecutive weeks. Teams competed against one another by developing various business strategies and carrying them out within the computer simulated game. Success was defined as the net profit and capital stock and surplus over eight "quarters" of the game. Regression analyses indicated that multidimensional achievement motivation, need for power and influence, and needs for external reinforcement had complex relations to success at various periods of the game. Results from the initial stages of the game were similar to those reported for survey data of owner/operators of businesses in the field. Differences between the patterns for male and female subjects were found which require additional study both within controlled laboratory settings and in field research with successful male and female entrepreneurs. (NRB)

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BUSINESS PROFITABILITY: A SIMULATION STUDY OF PERSONALITIES AND ORGANIZATIONAL SUCCESS[1]

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Running head: Business profitability

[1]The authors wish to thank Drs. L. Osterhaus, G. Cadenhead, J. T. Spence, and J. Palladino and R. L. Helmreich for their assistance, comments and criticisms of this research, and K. Copper, D. Lebl, E. J. Krus, D. Poston, and R. Young for their assistance with the data. The portions of this study dealing with successful entrepreneurs have previously been presented at the annual meeting of the Academy of Management in Boston, August, 1984 and the 29th World Conference on Small Business in Chicago, June, 1984.

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Business Profitability: A Simulation Study of Personalities and Organizational Success

Abstract

The data reported in this paper are from a simulation of recent studies by Carsrud, Olm, and Thomas (1984a, 1984b) on factors affecting success in entrepreneurs and small business owner-operators. This study attempts to demonstrate complex interactions between multi-dimensional achievement and motivation and various personality traits of students participating in a business simulation game and the success of their "firms". Success is defined as the net profit and capital stock and surplus over eight "quarters" of playing a business simulation game. Regression analyses indicated multi-dimensional achievement motivation, need for power and influence, and needs for external reinforcement had complex relations to success at various periods of the game. The findings are also compared to recent data from successful entrepreneurs. The results are discussed in terms of the limitation of simulations in studying entrepreneurial success, and the differences in situational demands between simulations using college students and data from practicing entrepreneurs.

BUSINESS PROFITABILITY: A SIMULATION STUDY OF PERSONALITIES AND ORGANIZATIONAL SUCCESS

The effect of the personalities of potential entrepreneurs/ business owners on success in a business simulation game is the subject of this research. The study of entrepreneurship is the examination of both individual owners and the characteristics that affect their success (Carsrud, Olm, & Thomas, 1984a; 1984b). Among those who have studied owners and managers of businesses, McClelland's work on achievement motivation is cited widely (1961, 1965). Yet, (Gasse, 1982; Brockhaus, 1980, 1982) there is no clearly established link between business success and the personality characteristics of the individual.

In addition, Carland, Hoy, Boulton, and Carland (1984) have implied that a differentiating factor between the success of a small business owner and that of an entrepreneur is that the small business owner sees the business as an extension of his personality, while the entrepreneur is characterized primarily by innovative business behavior. However, this view does not preclude an entrepreneur's success from being determined or influenced by his or her stable personality and motivational characteristics. Pickle (1964), Hornaday and Bunker (1970), and Collins, Moore, and Unwalla (1964) all cite a high level of achievement motivation as characteristic of the successful business owner and entrepreneur.

Brockhaus (1982) concludes in his review that most research

on the characteristics of entrepreneurs has often been exploratory in nature, lacking in systematic investigation, and not well integrated with the remainder of the literature concerning business ventures. Gasse (1982) attributes some of the reported inconsistency to potentially biased samples reflected in low return rates to surveys. An additional source of variance may be the result of the use of very different populations, such as successful business owners and college students enrolled in a course. For example, some inconsistency concerning the "Need for Achievement" and its relationship to success may stem from including non-owner managers in the samples of small business owners and entrepreneurs.

In addition, the instrument used by McClelland is the Thematic Apperception Test (TAT), a projective technique, while Komives (1972) used a rating scale assessing "Need for Achievement" as a life-style value, a technique similar to that developed by Mehrabian (1968). One theoretic commonality exists in these studies and measures. These are that "Need for Achievement" or "Achievement Motivation" (Ach) is seen as a unidimensional concept, and that any measure of Ach should produce a single score.

The measure of achievement motivation chosen for this study is a multi-dimensional scale, the "Work and Family Orientation Inventory" (WOFO) which has shown considerable predictive validity in both laboratory and applied settings (Helmreich & Spence, 1978; Carsrud et al., 1984a, 1984b). It contains three

subscales referring to "Mastery Needs", "Work Orientation", and "Interpersonal Competitiveness". These dimensions of "Ach" are assessed through questions such as "I like to work hard" (Work Orientation); "I prefer to work in situations that require a high level of skill" (Mastery Needs); and "I feel that winning is important in both work and games" (Interpersonal Competitiveness).

A series of studies using non-business owners (Spence & Helmreich, 1978; Helmreich & Spence, 1978; Helmreich, Beane, Lucker, & Spence, 1978; Helmreich, Spence, Beane, Lucker, & Matthews, 1980; Helmreich, 1982; and Carsrud, Dodd, Helmreich, & Spence, 1982) have shown that the quality and quantity of academic and vocational performance are predicted by varying combinations of the WOFO scores. These studies indicate that the "best" performance is typically exhibited by those individuals scoring high in mastery needs and work orientation, but low in interpersonal competitiveness. These vocational situations are ones in which having to interact with others is a necessary characteristic of the position. These studies question the reliance on the traditional unidimensional view of achievement motivation initially proposed by McClelland, Atkinson, Clark, and Lowell (1953), and McClelland (1961). The reported differences may be in the unique combination of various personality and motivation traits that affect a given job performance rather than the presence or absence of achievement motivation. It is predicted, based on the results of Carsrud,

et al. (1984a, 1984b) that the performance of students performing in the business simulation game will be highly similar to the results obtained from successful business owners having less than 50% control of their firms. It is predicted that interpersonal competitiveness and the interaction of the sum of work and mastery with interpersonal competitiveness will be significantly related to success in the business simulation game.

The confusion on the role of personality variables in entrepreneurial success may also stem from the use of clinical personality assessment techniques and scales that have been developed and standardized on non-normal populations. In addition, many of the variables assessed by these clinical tests are not clearly related to job performance. Finally, it is also naive to assume that personality variables are immune to the dominating effects of situational factors such as economic conditions.

To assess stable owner characteristics various measures of predominantly masculine and predominantly feminine personality traits were obtained from the Extended Personality Attributes Questionnaire (EPAQ) developed by Spence and Helmreich (1978). Two predominantly masculine personality characteristics and two predominantly feminine personality characteristics were assessed. By predominant, it is meant that the characteristic occurs to a greater frequency in one sex or the other, although both sexes may exhibit the trait to some degree. The masculine

traits assessed were instrumentality--the desire to make things work and understand their operation, and hostility--the desire to dominate through physical action in order to bring harm to another. The feminine traits assessed were expressivity--the desire to be sensitive to others and their feelings and to be sensitive to one's own feelings, and verbal aggression--the desire to be aggressive verbally toward others.

Recent research (Helmreich, 1982) indicates that the performance of pilots within multi-person crewed commercial aircraft was positively predicted by expressivity and negatively predicted by verbal aggression. Likewise Carsrud, et al. (1984b) found that hostility, verbal aggression and expressivity were significantly related to the success of the business because of the need for the owners to interact with employees and clients in a fashion similar to that reported by Helmreich (1982) for captains of commercial aircraft.

Two additional motivational measures were obtained using an experimental measure of need for power and need for influence currently being developed (Bennett & Spence, 1983). These measures attempt to assess need for power and need for influence independent of one's ability to utilize influence or have power. It is predicted, based on McClelland, et al. (1953) and Carsrud, et al. (1984b) that the needs for power and influence will be negatively associated with business success.

Method

Subjects and Procedures

Subjects were 152 students (86 males, 66 females) enrolled in an undergraduate Business Policy course. All students were senior business administration majors. Participation in the study was required. Subjects completed the WOFO, EPAQ, power/influence questionnaires during the first week of the semester prior to being involved in the business simulation game for eight consecutive weeks (corresponding to eight quarters of business). Students worked together in teams of four persons each, with each person therefore having 25% "ownership of the firm." The simulation required that the team work together in developing various business strategies and carry them out within a computer simulated game in competition with the other teams. Students were competing with other students, in that the total amount of net profits and capital stock and surplus at the end of the game determined the students' grade in the class. All teams began the first quarter with total assets of $236,806 against which final net profit and capital surplus would be judged.

The game requires that students integrate a variety of financial and managerial skills in manufacturing and selling two products. They have to make decisions concerning marketing strategies, production, distribution, expansion, scheduling, purchasing machinery and materials, labor and credit.

Results and Discussion

In order to determine the effects of the various personality and achievement motivation factors on entrepreneurial success, a series of regression analyses were conducted. Average net profits for the first two quarters, and the final net capital stock and surplus amount were used as the measures of success. Hierarchical regressions were used for the analyses to give greater theoretical importance to the individual personality and motivational factors with later entry given to various external reinforcement factors associated with the job (pay, prestige, etc.). Only subjects who had final net worth greater than their initial assets were included in the analyses to allow comparison with the results from the studies of successful entrepreneurs (Carsrud, et al. 1984a, 1984b). This reduced the number of subjects in the analyses to 136 subjects (75 males, 60 females). Because of anticipated sex differences, separate hierarchical regression analyses were employed to allow for comparison to the all male data of Carsrud, et al. (1984a, 1984b).

The two criterion variables used in the study were chosen to determine if the various personality variables varied in their effects across time. This follows a suggestion by Carsrud, et al. (1984b) and which was not possible from the confidential records of existing business in that study. The first criterion variable was the average net capital worth and stock surplus for the first two quarters (CAPQA). The second

criterion was the net capital worth and stock surplus following the end of the eight quarters of the business simulation game (WORTH).

The primary personality/motivational predictor variables were: (1) work; (2) mastery; (3) interpersonal competitiveness; (4) personal unconcern (disregard of others); (5) verbal aggressiveness; (6) instrumentality; (7) expressivity; (8) hostility; (9) need for power; and (10) need for influence. The primary job related variables (external reinforcers) were: (1) a job with power; (2) a job that pays well; (3) a job valued by others; and (4) a job with prestige. Table 1 contains the correlation matrix of the success measures, by sex, with each of the predictor variables.

Insert Table 1 about here

As can be seen in the correlation matrix the pattern of significant correlations varied between sexes and by the particular success measure examined. For example there were significant correlations between personal unconcern, verbal aggression, hostility, power, and influence and the average net profit for the first two quarters (CAPQA) of the game. This pattern is somewhat similar to those reported by Carsrud, et al. (1984a, 1984b) in their study of successful male business owner/operators. The lack of significant correlations with the final net worth measure does not correspond to findings from the

"real world" data of Carsrud, et al. (1984a, 1984b).

For females, the correlational pattern is likewise different across the two measures of success. It does not follow the pattern of correlations noted by Carsrud, et al. (1984a, 1984b) for males, in fact for CAPQA, the correlations between mastery and interpersonal competitiveness are opposite to those reported for the owner-operators of small businesses.

Table 2 shows the hierarchical regression results for the successful males in the business simulation game where the average net profit for Quarters 1 and 2 (CAPQA) is the criterion. These analyses indicate that the personality variables have a significant relationship to the success of these students on their initial quarters in the game. Table 3 provides the results of the hierarchical regression

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Insert Tables 2 and 3 about here

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for the successful females in the game using CAPQA as the criterion variable. Here the results are less clear than for the male data and do not parallel the results reported by Carsrud et al. (1984a, 1984b) for successful male business owners.

Tables 4 and 5 present the results of the hierarchical regressions for males and females with the final net worth criterion variable. In general the earlier pattern for CAPQA does not appear and the effects of the personality/motivational

measures on success are less distinct. This may reflect changes in situational demands during the eight weeks the game is in operation. Interviews with participants following the game's completion indicated that as the pressure to succeed increased toward the end of the game, the decisions made by many participants reflect a frustration of having little control over the events programmed into the game.

It is possible that the business game simulation is not a perfect simulation of the business environment in the "real-world" where interactions with others is an important part of the decision-making process. Likewise, the brief duration of the game, with the pressure to make many decisions rapidly, may not be typical of "real" business settings. In that pressure situation of the game's compressed quarters, the effects of individual personality and motivation might well be overpowered by the situational demands of the game over time.

In conclusion, the results are somewhat encouraging in that for the initial stages of the game the results are similar to those reported for survey data of owner/operators of businesses (Carsrud, et al., 1984a, 1984b). The differences between the patterns for male and female subjects that was found in the current study requires additional investigation both within controlled laboratory settings and in field research with successful male and female entrepreneurs. The results of this study, when compared to the field studies of Carsrud, et al. (1984a, 1984b) and Helmreich (1982) indicate the difficulty of

developing generalized models from laboratory studies without proper comparison to data acquired about the normal course of human behavior.

References

Bennett, J. & Spence, J. T. (1983). Experimental measures of Needs for Power and Influence. Unpublished paper, University of Texas at Austin.

Brockhaus, R. H. (1982). The psychology of the entrepreneur. In C. A. Kent, D. A. Sexton, & Vesper, K. H., Encyclopedia of Entrepreneurship (39-55). Englewood Cliffs, N.J.: Prentice-Hall.

Brockhaus, R. H. (1980). Psychological and environmental factors which distinguish the successful from the unsuccessful entrepreneur: A longitudinal study, Academy of Management Proceedings.

Carland, J. W., Hoy, F., Boulton, W. R., & Carland, J. A. C. (1984). Differentiating entrepreneurs from small business owners: A conceptualization. Academy of Management Review, 9 (2), 354-359.

Carsrud, A. L., Dodd, B. G., Helmreich, R. L., & Spence, J. T. (August, 1982). Predicting performance: Effects of scholastic aptitude, achievement motivation, past performance, and attributions. Paper presented at the convention of the American Psychological Association, Washington, D.C.

Carsrud, A. L., Olm, K. W., & Thomas, J. B. (1984a). Small business productivity: Relationship of owner's personality to organizational success. In M. Wortman's (ed.) Proceedings of the 29th World Conference on Small Business.

Carsrud, A. L. Olm, K. W., & Thomas, J. B. (1984b). Predicting entrepreneurial success: Effects of multi-dimensional achievement motivation, levels of ownership, and cooperative relationships. Paper presented at the convention of the Academy of Management, August, Boston.

Collins, O. F., Moore, D. G., & Unwalla, D. B. (1964). The Enterprising Man. East Lansing, Michigan: Michigan State University Business Studies.

Gasse, Y. (1982). Elaborations on the psychology of the entrepreneur. In C. A. Kent, D. A. Sexton, & Vesper, K. H., Encyclopedia of Entrepreneurship (57-66). Englewood Cliffs, N.J.: Prentice-Hall.

Helmreich, R. L. (1982, August). Pilot selection and training, Paper presented at the meeting of the American Psychological Association, Washington, D.C.

Helmreich, R. L., Beane, W. E., Lucker, G. W., & Spence, J. T. (1978). Achievement motivation and scientific attainment. Personality and Social Psychology Bulletin, 4, 222-226.

Helmreich, R. L. & Spence, J. T. (1978). The Work and Family Orientation Questionnaire: An objective instrument to assess components of achievement motivation and attitudes towards family and career. JSAS Catalog of Selected Documents in Psychology, 8, 35 (Ms. No. 1677).

Helmreich, R. L., Spence, J. T., Beane, W. E., Lucker, G. W., & Matthews, K. A. (1980). Making it in academic psychology: Demograph and personality correlated of attainment. Journal of Personality and Social Psychology, 39, 896-908.

Hornaday, J., & Bunker, C. (1970). The nature of the entrepreneur. Personnel Psychology, 23, 1, 47-54.

Komives, J. L. (1972). A preliminary study of the personal values of high technology entrepreneurs. In A. C. Cooper & J. L. Komives (eds.) (Proceedings) Technical Entrepreneurship: A Symposium. Milwaukee: Center for Venture Management.

Livesay, H. C. Entrepreneurial history. In C. A. Kent, D. A. Sexton, & Vesper, K. H. Encyclopedia of Entrepreneurship (7-14). Englewood Cliffs, N.J.: Prentice-Hall.

Mehrabian, A. (1968). Male and female scales of the tendency to achieve. Educational and Psychological Measurement, 25, 493-502.

McClelland, D. C. (1961). The Achieving Society. Princeton: Van Nostrand.

McClelland, D. C. (1965). Achievement motivation can be developed, Harvard Business Review, November-December.

McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). The Achievement Motive. New York: Appleton-Century-Crofts.

McClelland, D. C., & Winter, D. G. (1969). Motivating Economic Achievement. New York: Free Press.

Pickle, H. B. (1964). Personality and success: An evaluation of personal characteristics of successful small business managers. Washington, D.C.: U.S. Small Business Admininstration.

Spence, J. T., & Helmreich, R. L. (1978). Masculinity and feminity: Their psychological dimensions, correlates and antecedents. Austin: University of Texas Press.

Table 1

Correlation Matrix

Measures of Net Worth with
Motivational/Personality Variables by Sex

Variable	CAPQA		WORTH	
	Male	Female	Male	Female
Personality Variables	(N=75)	(N=60)	(N=75)	(N=60)
Work	-.19	-.14	-.08	-.11
Mastery	-.07	-.25*	-.05	-.11
Interpersonal Competitiveness	-.12	-.25*	.05	.08
Personal Unconcern	.25*	.06	.13	-.12
Verbal Aggressiveness	-.23*	-.02	-.05	.02
Instrumentality	-.16	.05	-.23*	.07
Expressivity	.16	.02	.13	-.07
Hostility	-.25*	.05	-.20	.07
Power	-.23*	.02	.00	-.18
Influence	-.24*	.07	-.18	-.19
Job-related Variables				
Job with Power	-.09	-.16	-.04	-.11
Job Pays Well	-.09	.01	.06	-.32**
Job Valued by Others	-.07	-.19	-.07	-.15
Job with Prestige	-.08	-.25*	.13	-.02

*p<.05
**p<.01

Table 2

Hierarchical Regression Results for Successful Males (N=75) with Average Net Worth for Quarters 1 and 2 (CAPQA)

Step	Variable	F to Enter	p	R^2	Overall F	p
1	Mastery	6.31	<.01	.05	2.57	<.04
	Competitiveness	4.48	<.04	.14		
	Influence	.05	<.82	.14		
	Power	.01	<.93	.15		
2	Job power	.14	<.71	.15	2.04	<.07
	Job pay	2.66	<.11	.18		
	Job value	1.21	<.28	.20		

Table 3

Hierarchical Regression Results for Successful Females (N=60) with Average Net Worth for Quarters 1 and 2 (CAPQA)

Step	Variable	F to Enter	p	R^2	Overall F	p
1	Competitiveness	1.50	<.22	.02	1.38	<.25
	Unconcern	.83	<.37	.03		
	Job value	3.52	<.05	.07	1.69	<.16
	Job pay	.64	<.43	.08		

Table 4

Hierarchical Regression Results for Successful Males (N=75) with Final Net Worth

Step	Variable	F to Enter	p	R^2	Overall F	p
1	Mastery	.001	<.97	.01	1.51	<.21
	Competitiveness	2.92	<.09	.02		
	Influence	.03	<.58	.07		
	Power	1.01	<.29	.09		
2	Job pay	3.53	<.06	.14	1.40	<.22
	Job value	.28	<.59	.14		
	Job power	.29	<.58	.15		

Table 5

Hierarchical Regression Results for Successful Females (N=60) with Final Net Worth

Step	Variable	F to Enter	p	R^2	Overall F	p
1	Competitiveness	1.27	<.26	.02	.95	<.39
	Unconcern	.36	<.55	.02		
2	Job value	2.98	<.08	.05	1.62	<.18
	Job pay	1.93	<.17	.07		